Mechanical Preliminary Design Layout for MIPP Upgrade

Fermilab/PPD/MD

by

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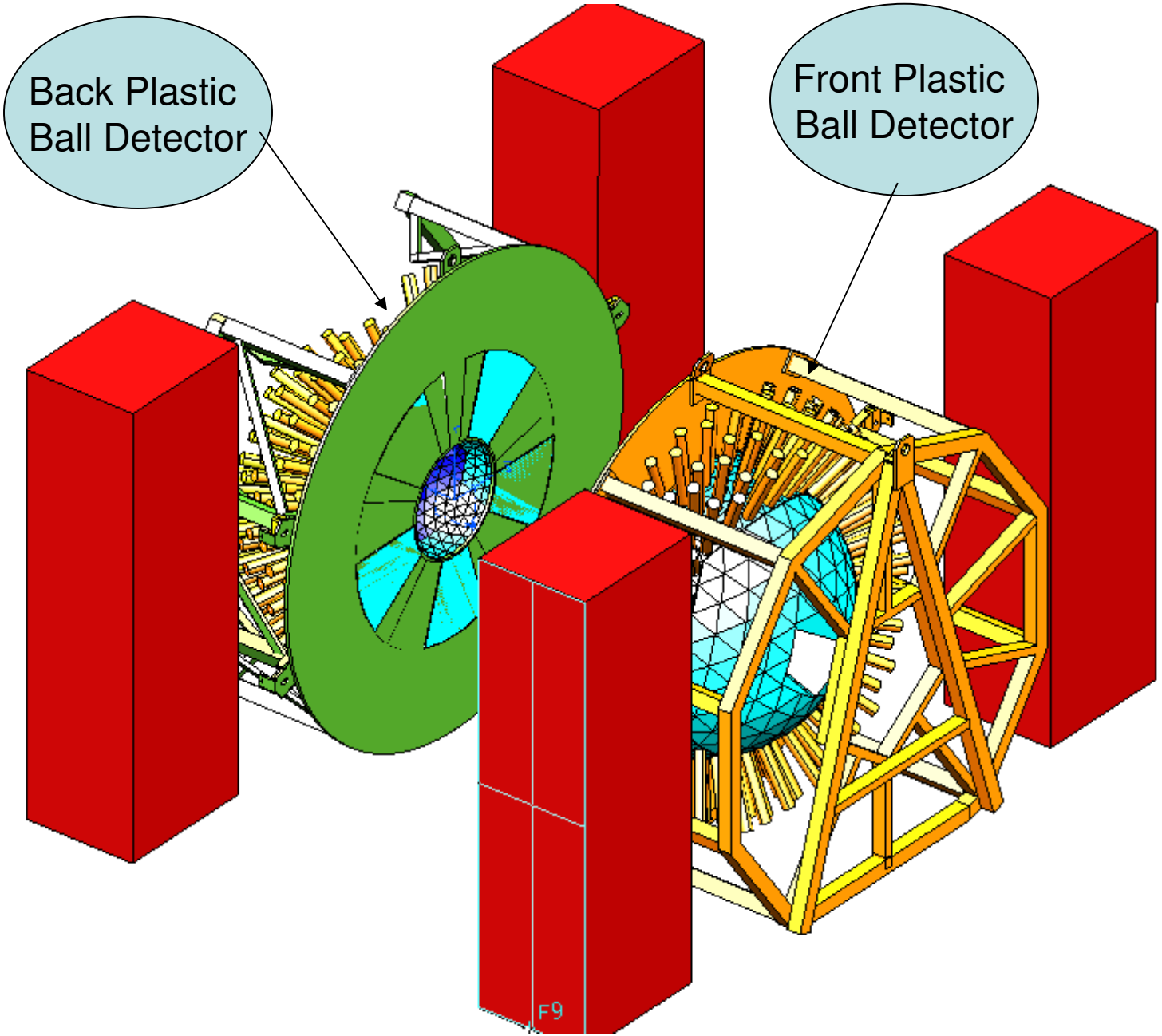
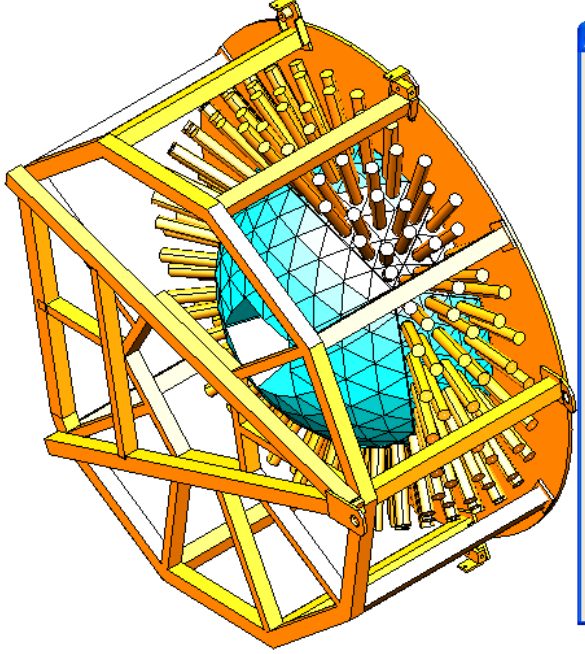
Overall view of the current M-center Jolly Green Giant Magnet area


Back Plastic
Ball Detector
Front Plastic
Ball Detector
F9



Physical Properties

Units : Inch (pound f)

Assembly: PLASTIC_BALL_DETECTOR_ | Calculate | Med Acc

Material: No Material Assigned | Enter properties

Local coordinates

Solid Surface Area	48746.3	in^2	Density	0.000138288	lbf.s^2/in^4
Open Surface Area	2483.45	in^2	Mass	5.70098	lbf.s^2/in
Volume	41225.5	in^3	Weight	2201.08	lbf
Center of Gravity	-61.0156, 0.544771, 0.20053				

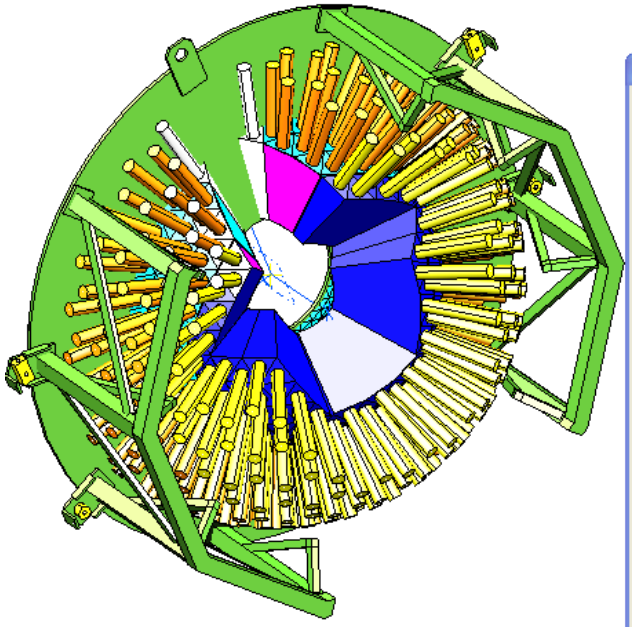
Inertial properties... | Generate Report

OK | Apply | Reset | Cancel

Needs more engineering details:

Which ball ?
Materials?
Eng. drawings?

Go to **http://home.fnal.gov/~edchi/E907-07/dimensions%20and%20properties/** for more property details.



Master Assembly

Physical Properties

Units : Inch (pound f)

Assembly: PLASTIC_BALL_DETECTOR_ | Calculate | Med Acc

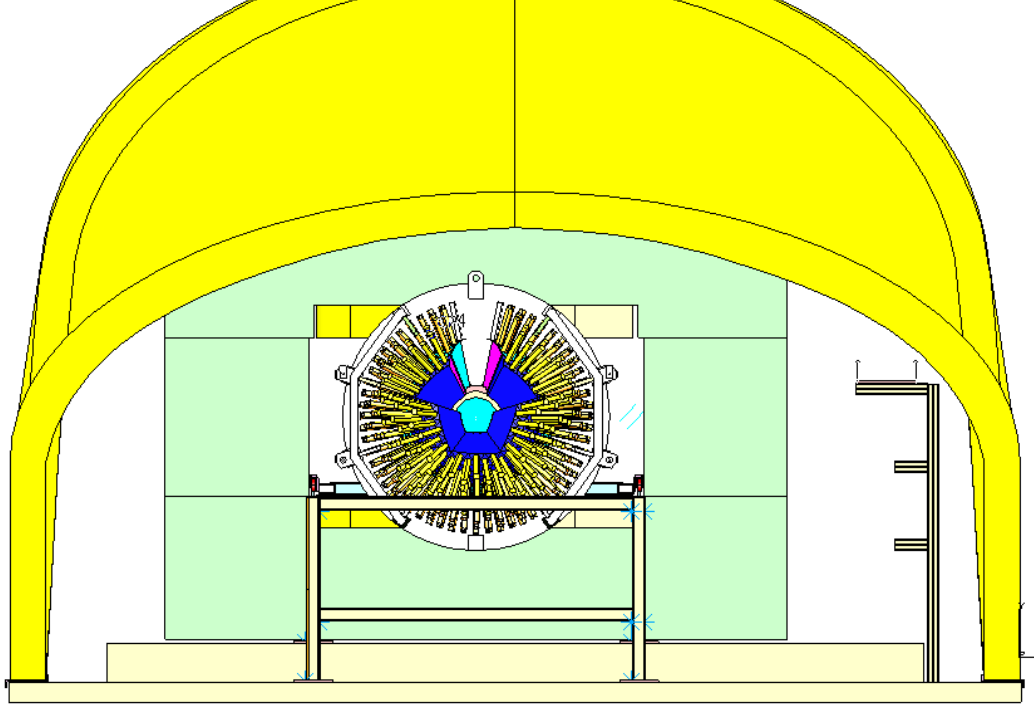
Material: No Material Assigned | Enter properties

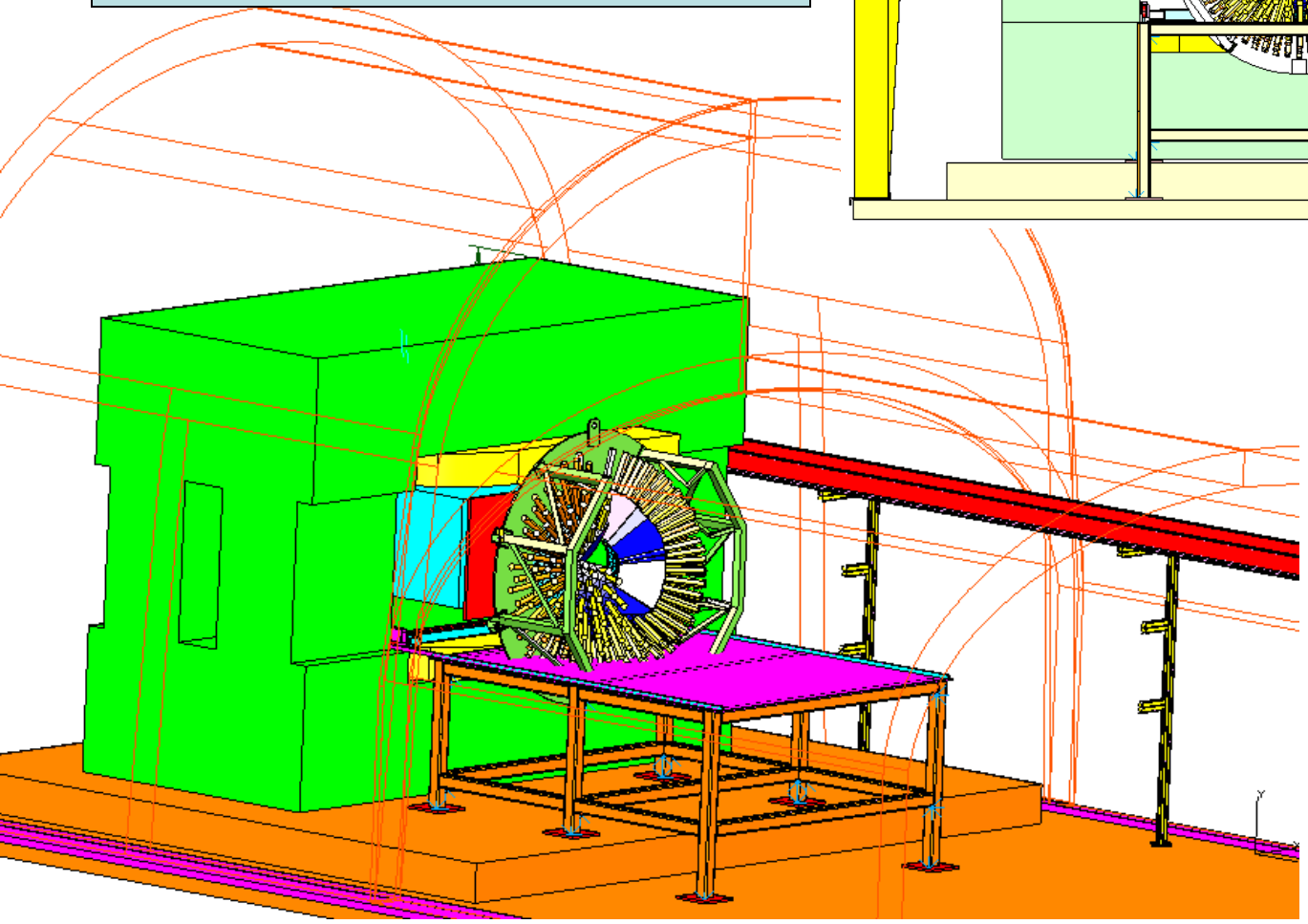
Local coordinates

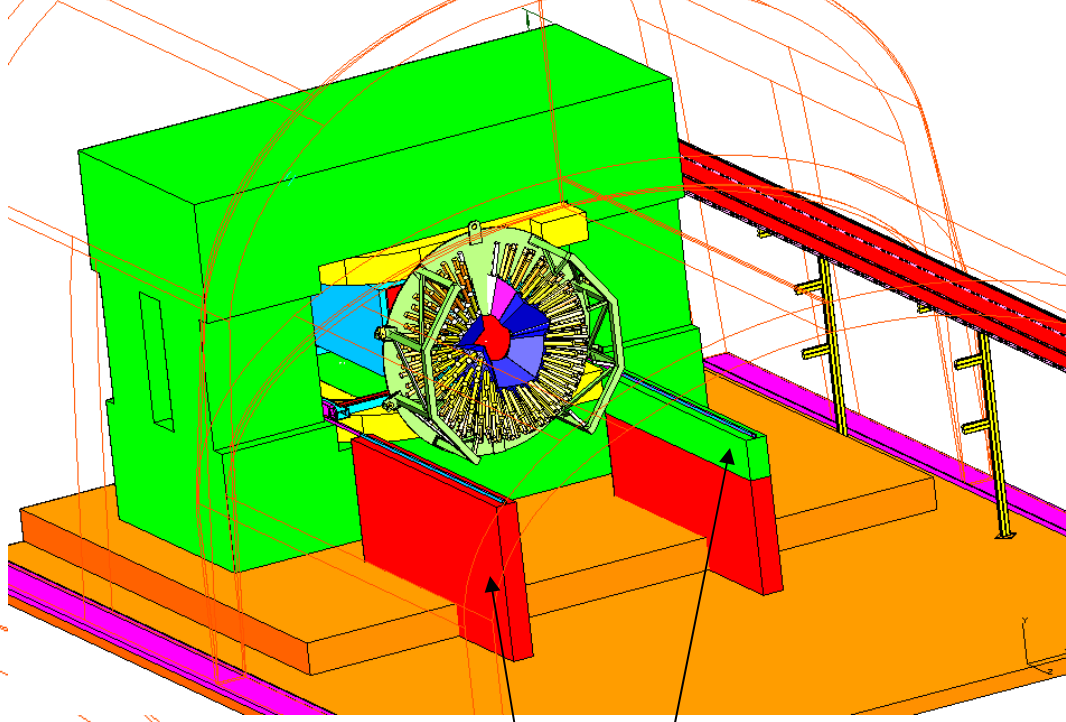
Solid Surface Area	50978.6	in^2	Density	0.00013399	lbf.s^2/in^4
Open Surface Area	3241.25	in^2	Mass	4.79558	lbf.s^2/in
Volume	35790.7	in^3	Weight	1851.52	lbf
Center of Gravity	9.03186, -2.05272, -0.0267167				

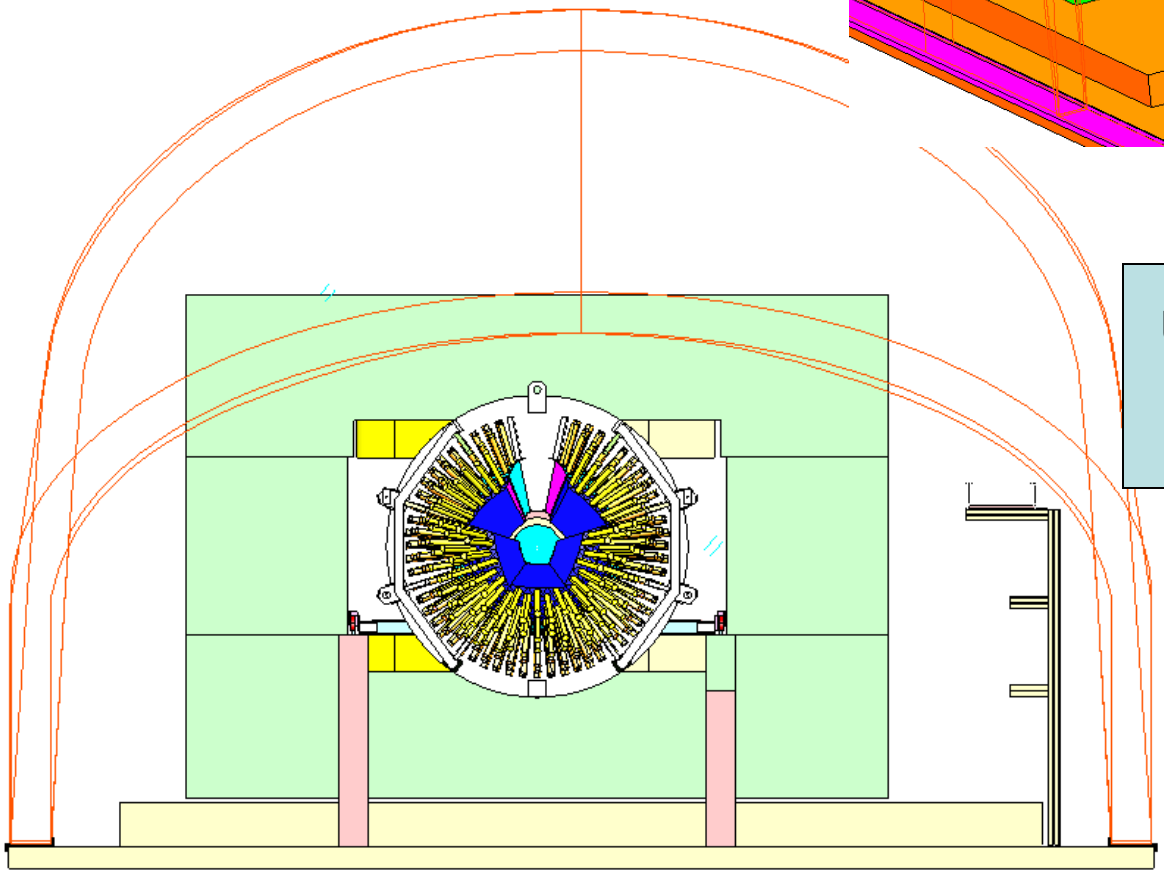
Inertial properties... | Generate Report

Assume to use the “back plastic ball detector”: There is an interference with the current TPC support table

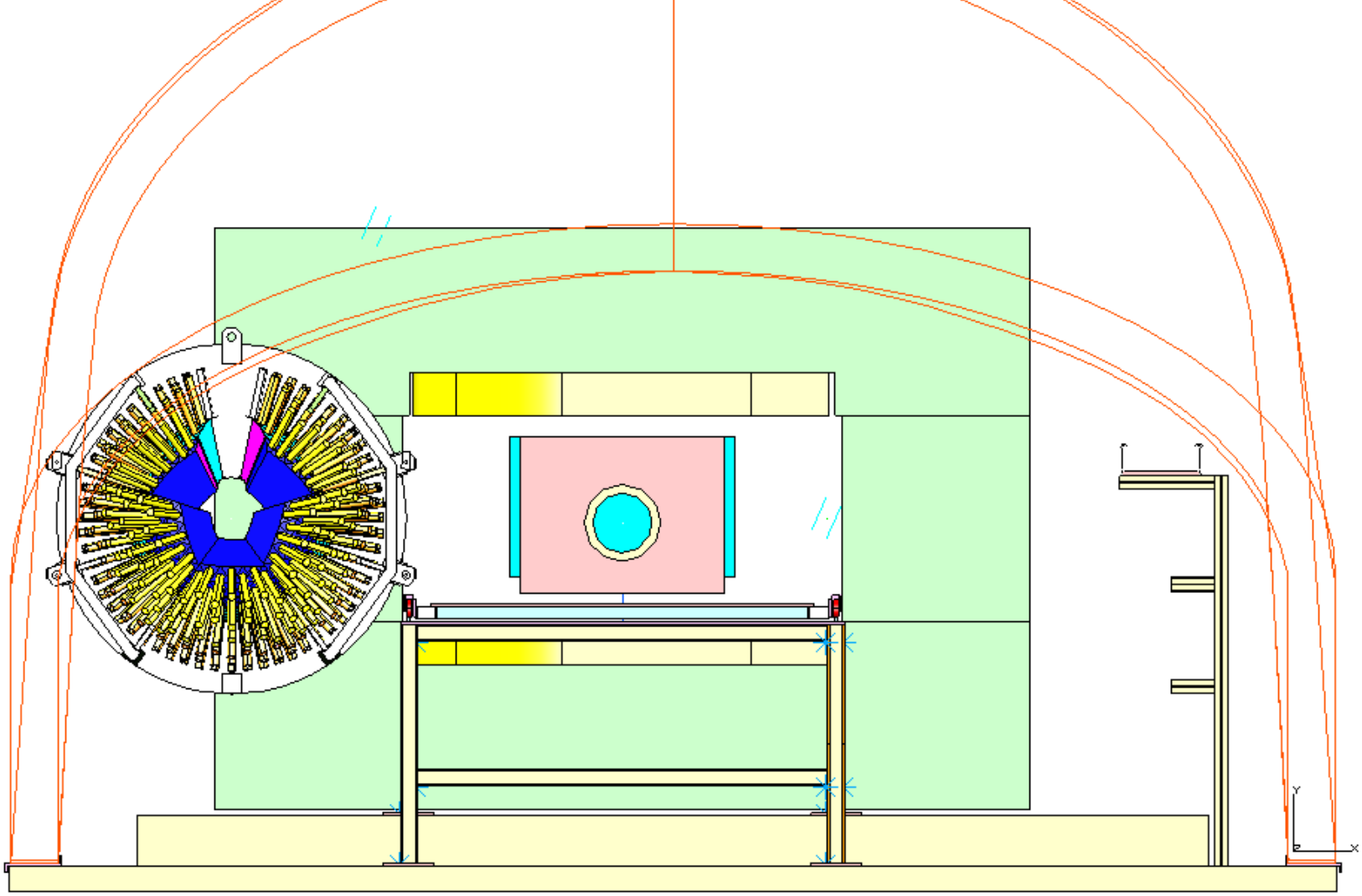






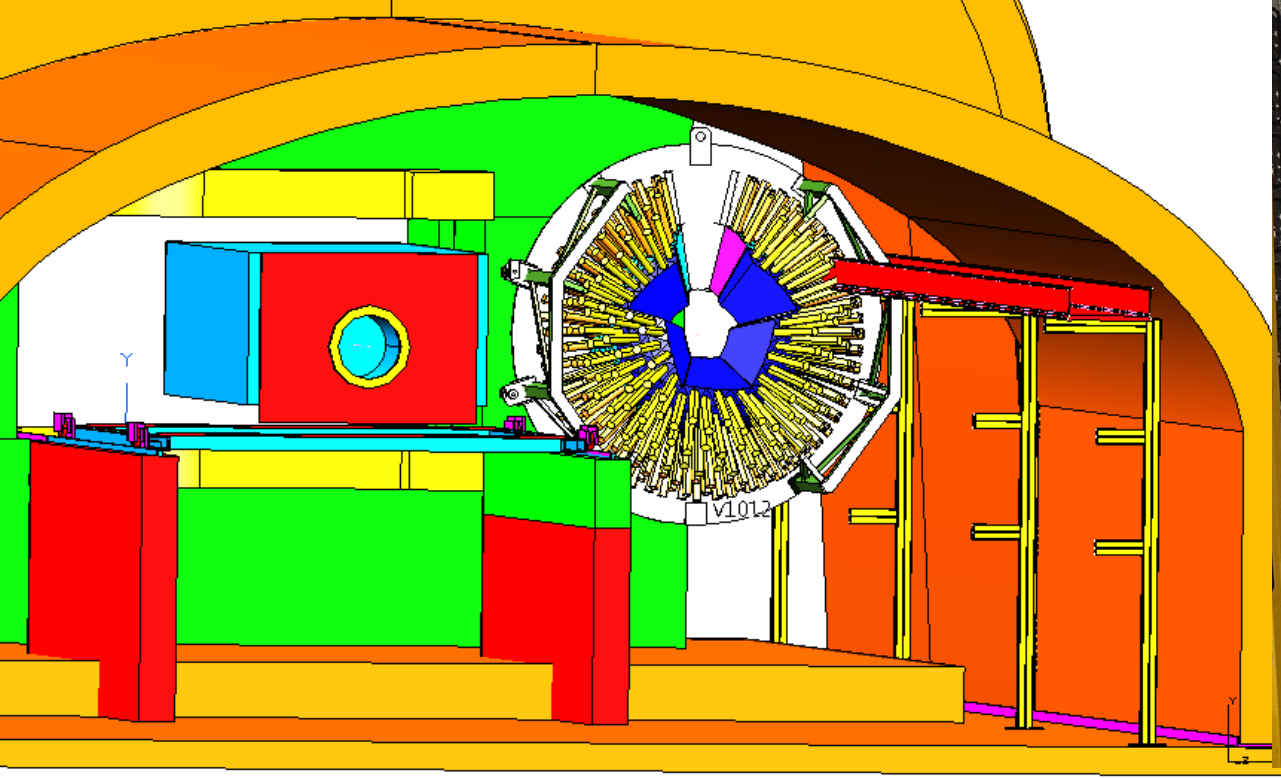


Using two independent rail supports with movable top section in the top. (The existing table has to go)



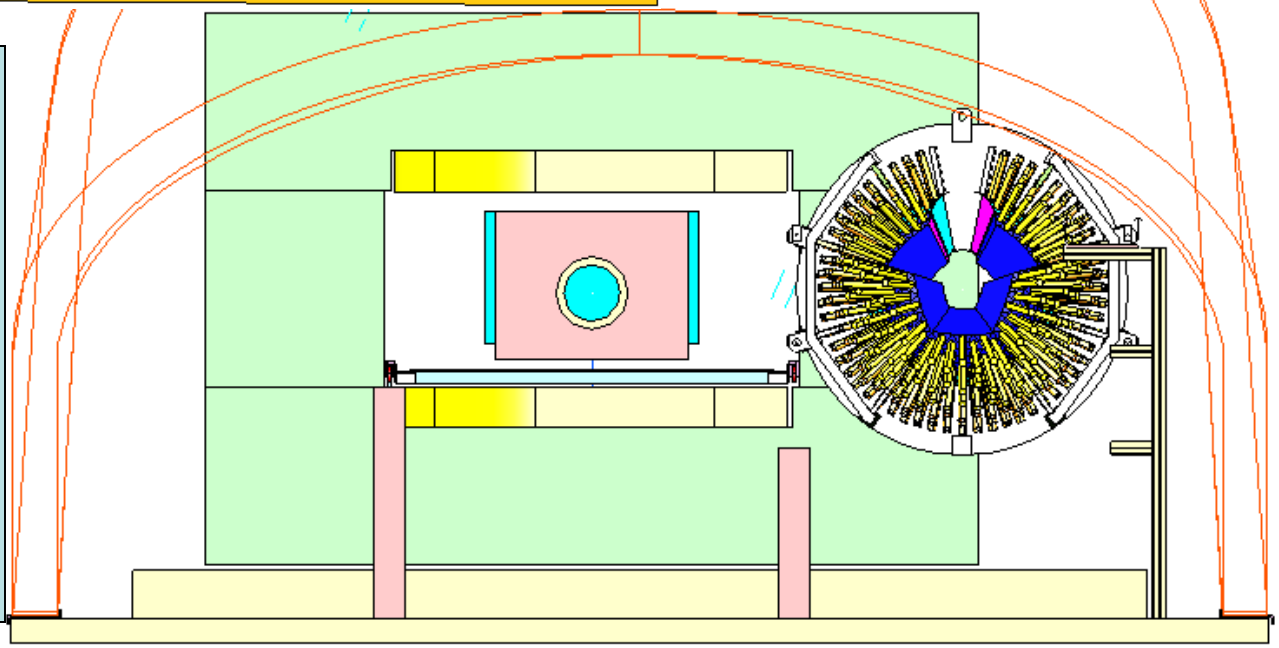
Option #1:

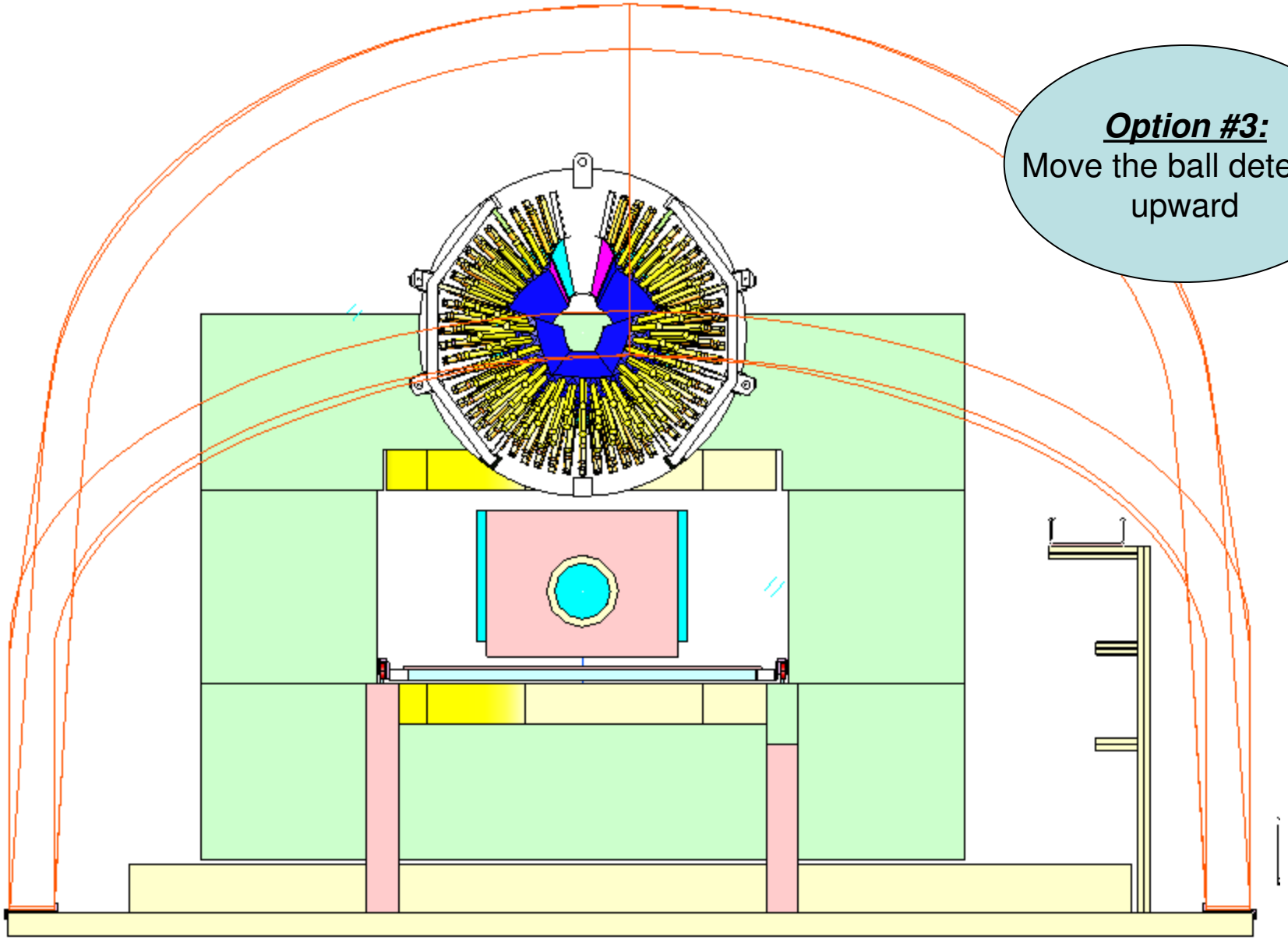
Move the ball detector to the west side of the hall – *The ball detector will have interference with the hall*.



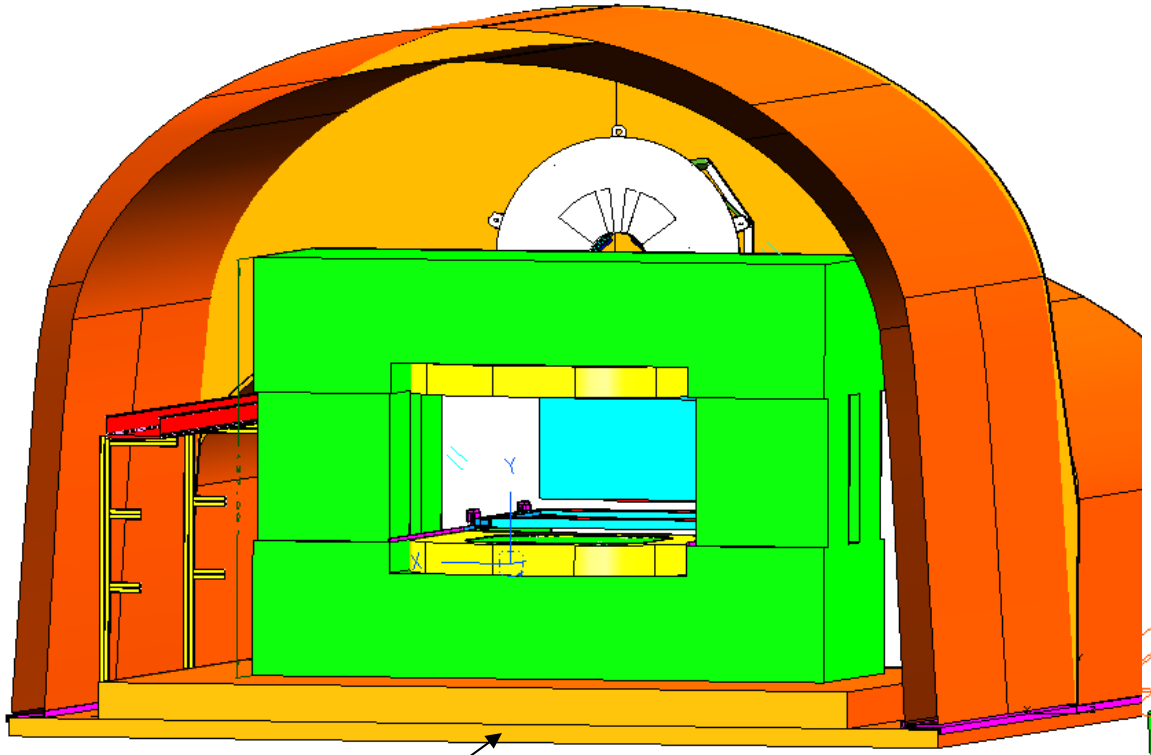
Option #2:

Move the plastic ball detector to the east – *No interference w/ the hall, but has inter. with the existing cable tray.*



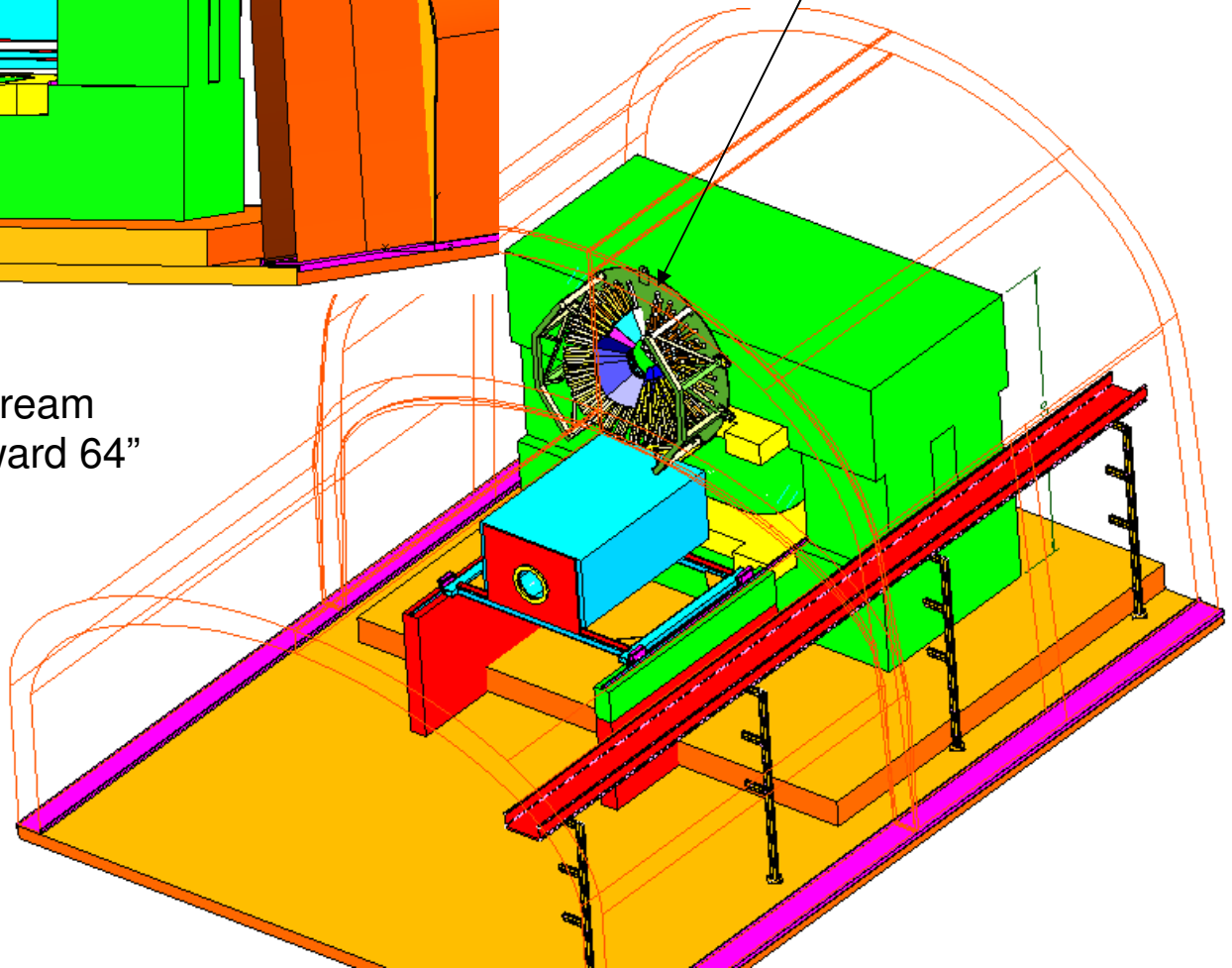


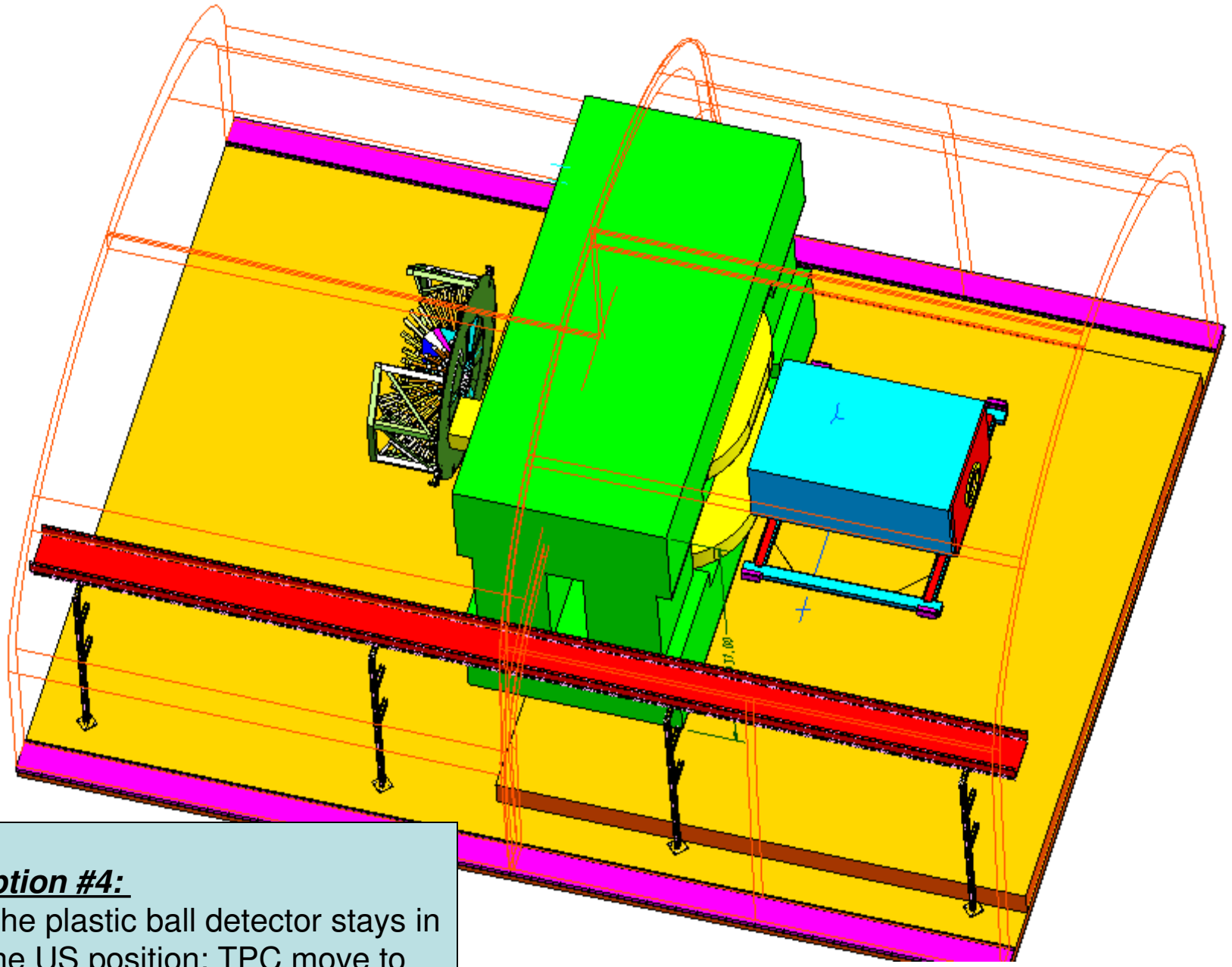
Option #3:
Move the ball detector upward



View from US to DS when the ball detector move up 64” (Y).

View from the downstream to upstream while the ball detector moving upward 64” (Y direction).





Option #4:

The plastic ball detector stays in the US position; TPC move to the DS location.

Four options - advantage, disadvantage, Which one?

Specifications: repeatability (cost, time)

Refrigerator, Hydrogen target – movable?

Others?